REMARKS

Claims 99-112 are under examination. Reconsideration is requested.

In the Action, the Examiner has set forth several objections to the claims for minor informalities, as detailed on page 2 of the Action. The claims have been amended and are believed to be free of the objections. Clarification of the objection to claim 109 is requested, as claim 109 does refer to parent claims in the alternative, and the basis of the objection is not understood.

Claims 99-109 were rejected under 35 USC § 112, first paragraph, as not being enabled. The Examiner appears to believe the claims are overly broad, and that it would require undue experimentation to practice the claimed invention. It is the Examiner's position that the specification does not reasonably provide enablement for "a protein comprising an amino acid sequence where one or a few amino acids are deficient, substituted or added in the amino acid sequence represented by SEQ ID NO:6 ..." This rejection is traversed for the following reasons.

Claim 99 recites "An isolated human-derived gene expressed in a cholinergic neuron which encodes a protein having high-affinity choline transporter activity." Applicants have provided detailed methods in the specification for isolating the claimed gene. Specifically, at pages 20-21, the specification describes the steps of

1. Conducting a data base search was conducted with the amino acid sequence of nematode (C. elegans) CHO-1 to find a sequence of specific human genome DNA fragment having significant homology;
2. Designing gene-specific primers for PCR based on a base sequence of said DNA fragment;
3. Conducting 5'-RACE and 3'-RACE using Marathon-Ready™ cDNA (Clontech) of human whole brain, together with an attached adapter primer;
4. Cloning the resulting PCR product into a cloning vector for PCR, and
5. Determining the base sequence of the inserted DNA.

The amino acid sequence encoded by this DNA sequence can then be determined. These

steps can be carried out on additional preparations to find other high-affinity choline transporters.

Accordingly, these methods can be used for the isolation of other such genes and their associated proteins that are included in the scope of the present invention, as will be apparent to those of skill in the art. Furthermore, it will be a matter of routine experimentation for a skilled artisan to make and test variants where one or a few amino acids are deficient, substituted or added in the amino acid sequence. It is routine in the art to make and test such variants, without undue experimentation. The construction of fusion proteins and host cells, as claimed in claims 107-109, is described in the specification and is routine in the art. For these reasons, withdrawal of the rejection of claims 99-109 for lack of enablement is respectfully requested.

In particular, the Examiner's reasoning is not understood with respect to claim 100, which recites "An isolated gene which encodes a protein comprising an amino acid sequence represented by Seq. ID No. 6." The scope of this claim appears to be within what the Examiner indicated was enabled. Withdrawal of the rejection in respect to claim 100 is respectfully requested.

The Examiner's reasoning is also not understood with respect to claim 105, which recites an isolated protein comprising a base sequence represented by Seq. ID No. 6. The scope of this claim appears to be within what the Examiner indicated was enabled. Withdrawal of the rejection in respect to claim 105 is respectfully requested.

Claims 110-112 have been rejected under 35 USC § 112, first paragraph, as not being enabled because the Examiner believes that the specification does not reasonably provide enablement for the practicing of said method in vivo (gene therapy) or transgenic animals made by the claimed method. In order to expedite prosecution, the claims been amended to limit the method to "in vitro", the means for which are well characterized in the specification. Reconsideration and withdrawal of the rejection are respectfully requested.

Claims 99, 101-104 and 106-109 have been rejected under 35 USC § 112, first

paragraph, as containing subject matter that is not described in the specification in such a way as to demonstrate that the inventor(s) had possession of the invention at the time the application was filed. It is the Examiner's position that the specification does not provide sufficient distinguishing identifying characteristics of the genus of polypeptides and polynucleotides. This rejection is traversed for the following reasons.

The claimed polypeptides and polynucleotides are well characterized by their function. The polypeptides are high-affinity choline transporters, the means for which of making and testing are described, *inter alia*, at pages 20-21 and 36. Persons of skill in the art will be well able to screen for the polynucleotides of the invention, clone the resulting products and determine the sequences, and make and test the polypeptides encoded by the polynucleotides for the desired activity. No undue experimentation is involved. It is respectfully submitted that the identifying characteristics of the claimed polypeptides are sufficiently described in the specification to clearly show that the inventors had possession of the claimed invention at the time the application was filed. Reconsideration and withdrawal of the rejection is respectfully requested.

Claim 103 has been rejected under 35 USC § 112, second paragraph, as being indefinite because the Examiner believes that the term "stringency" is a relative term that is not defined in the claim or the specification. This rejection is traversed for the following reasons.

"Stringent conditions" are described, for example, at pages 37-38 of the specification. Furthermore, the meaning of "stringent conditions" is known to those of skill in the art, who will be able to formulate conditions falling within this definition using the knowledge generally available in the art. Reconsideration and withdrawal of the rejection is respectfully requested.

Claims 99, 104 and 108 have been rejected as being indefinite because the Examiner believes that it is not clear from the claim language where the invention lies, i.e. in a gene, neuron or protein. Claims 99 and 108 have been amended for further clarity. It is respectfully submitted that claim 104 is clear as presented. It is respectfully

submitted that claim 99 is clearly intended to claim an isolated gene with the recited properties; claim 104 is clearly intended to claim a recombinant protein; and claim 108 is clearly intended to claim a host cell having an expression system for producing the recombinant protein. Withdrawal of the rejection is respectfully requested.

Claims 110-111 have been rejected as being indefinite because the Examiner believes that it is not clear from the claim language where the invention lies. Claims 110 and 111 have been amended to clarify the claimed method. The term "gene" was removed, as it lacked antecedent basis in the parent claim. The Examiner stated that the step of how the gene or DNA is introduced was missing from the claims. It is respectfully submitted that the DNA can be introduced by any means known to those of skill in the art, and that it is not necessary to limit the means in the claim, as many such methods are known in the art. Reconsideration and withdrawal of the rejection are respectfully requested.

All objections and rejections having been addressed, it is respectfully submitted that the application is in condition for allowance, and Notice to that effect is respectfully requested.

Respectfully submitted,

Date: 8/20/04

Ann S. Hobbs
Registration No. 36,830
VENABLE
P.O. Box 34385
Washington, D.C. 20043-9998
Telephone: (202) 962-4800

#561902v1